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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/098,832	06/17/1998	JARI HAMALAINEN	442-008040-U	4557

7590

07/17/2002

PERMAN & GREEN  
425 POST ROAD  
FAIRFIELD, CT 064306232

EXAMINER

PHAN, MAN U

ART UNIT PAPER NUMBER

2665

DATE MAILED: 07/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
09/098,832

Applicant(s)  
Hamalainen et al.

Examiner  
Man Phan

Art Unit  
2665



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on May 15, 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some\* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

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***Response to Amendment and argument***

1. This communication is in response to applicant's 05/15/2002 Amendment in the application of Hamalainen et al. for a "Time division multiple access radio system" filed 06/17/1998. This application claims foreign priority based on the application 972724 dated 06/24/1997 filed in Finland. The proposed amendments have been entered and made of record. Claims 1-6 are pending in the application.

2. Applicant's amendment and argument to the rejected claims are insufficient to distinguish the claimed invention from the cited prior arts or overcome the rejection of said claims under 35 U.S.C.103 as discussed below. Applicants' argument with respect to the rejected claims have been fully considered, but they are not persuasive for at least the following reasons.

3. Applicant's arguments with respect to the rejected claims have been fully considered but they are not persuasive. On page 5, first paragraph, Applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning. In response, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re*

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*McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Persson, Ohta and Galyas et al. are in the same field of endeavor for the purpose of dividing a TDMA frame structure with dynamic slot allocation for operating in a mobile telephone system which operates in half duplex.

4. Applicant's argument with respect to the rejected claims 1, 2, 5 and 6 (Page 4, second paragraph) that the teaching of Ohta illustrated in Figs 2A-C "*only show allocation of the frequency bands, but not the time slots*". However, in Ohta's system, a time slot allocated to a user represents one of a number of available carrier frequencies. The term "frame slot" as used herein is therefore intended to include, for example, both *time slots and frequency slots*. More generally, the slot allocation permutation of the present invention is then applied to the various TDM carrier time slots, in a manner similar to that described in Ohta's invention and can be implemented in a time division system. One skilled in the art can readily adapt the teachings herein to implement a wide variety of different time division (TDMA), frequency division (FDMA) and code division systems (CDMA). Applicant further alleges that the cited references

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do not disclose "*a greater number of time slots would be allocated in each downlink TDMA frame than in each uplink*". However, Ohta (US#5,878,277) discloses a communication system having at least two types of communication channels which has a central station and a plurality of terminal stations connected through a bi-directional communication path such that the terminals communicate with each other through the central station. Figs. 2A-C illustrated diagrams showing the assignment of frequency bands used on a communication path in accordance with the present invention, in which an entire band 10 utilized for uplink signals transmitted from the terminals to the head end ranges from 10-50MHz, while an entire band 20 utilized for downlink signals reversely transmitted from the head end to the terminal side ranges from 70-450 MHz (Col. 8, lines 37 plus). Therefore, examiner maintains that the references cited and applied in the last office actions for the rejection of the claims are maintained in this office action.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-2, 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Persson (US#5,442,635) in view of Ohta (US#5,878,277).

With respect to claims 1-2, 5-6, both of these references teaches the capability of effectively and efficiently carrying out multislot capabilities and utilizing half duplex transmission/reception. Persson (US#5,442,635) discloses a method for dividing a frame structure for a mobile telephone system which operates in *half-duplex*, i.e. in which the *transmission and reception of signals in a mobile takes place within mutually separate time-slots* (TS0 and TM0 respectively). Each frame includes three time-slots, each intended for transmission and reception. According to the method, the frame structure is divided so that transmission (TX) first takes place in a transmission time-slot (TS0). Reception (RX) then takes places in a reception time-slot (TM0) which is separate from the transmission time-slot (TS0). Subsequent to reception (RX), the frame structure includes an idle time (t.sub.1) which remains until further

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transmission (TX) takes place in the next-following frame. The method enables the frequency synthesizer (FM) of the mobile in the reception direction to be set to a channel (f.sub.x) different to the reception channel (f.sub.m) and then to be reset accurately to the reception channel (f.sub.m) (Figs. 3, 4 and the Abstract).

However, Persson does not expressly disclose the step of allocating a greater number of times slots in each downlink TDMA frame than in each uplink TDMA frame. In the same field of the endeavor, Ohta (US#5,878,277) teaches in Fig. 2A illustrated a diagram showing the assignment of frequency bands used on a communication path in accordance with the present invention. An entire band 10 utilized for uplink signals transmitted from the terminals 5-1, 5-2 to the head end 1 ranges from *10 to 50 MHZ*, while an entire band 20 utilized for downlink signals reversely transmitted from the head end 1 to the terminal side ranges from *70 to 450 MHZ*. The multimedia communications system according to the present invention utilizes three empty bandwidths (6 MHZ/channel) (indicated by hatched portions in FIG. 2A) 15, 25 in each of the uplink and downlink frequency bands, which have been originally assigned to the transmission of TV signals but are not actually used therefor in the CATV, for bi-directional transmission of audio signals (for telephones and facsimile apparatuses) and data signals (for computers). For more specific illustrations, exemplary assignments of signal bands in each of bandwidths 15, 25 indicated by hatched portions in Fig. 2A are shown in greater detail in Figs. 2B and 2C, respectively (Col. 8, lines 37 plus). Unlike a common TDD technique in which fixed time slots are allocated to uplink and downlink transmission, an STDD or PSTDD technique allows time

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slots to be dynamically allocated to either uplink or downlink transmission in accordance with demand, in favor of uplink or downlink.

One skilled in the art would have recognized the need for efficiently providing a method and system for allocating of time slots in uplink/downlink TDMA frames using half duplex, and would have applied Ohta's novel use of the frequency assignment of the frequency bands used on a communication path into Persson's teaching of the division of the frame structure when transmitting and receiving signals in a mobile station. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Ohta's communication system having at least two types of communication channels into Persson's method for dividing a frame structure in a mobile station with the motivation being to provide a system and method for operating a TDMA radio system having multi slot capabilities and utilizing half duplex.

8. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Persson (US#5,442,635) in view of Ohta (US#5,878,277) as applied to the claims above, and further in view of Galyas et al. (US#6,205,157).

With respect to the claims 3-4, these claims differ from claims above in that the claims require wherein the TDMA radio system utilises the GPRS and HSCSD protocols. Currently, the Global System for Mobile Communication (GSM) based PCS systems operate at 1900 MHZ, and support only up to a rate of 9.6 Kbps for data transfer. Higher rate wideband applications are



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constantly being sought after to meet the ever growing demand of wireless communication services. Accordingly, High Speed Circuit Switched Data (HSCSD) and General Packet Radio Services (GPRS) are being standardized to accommodate this grave need. In the same field of endeavor, Galyas (US#6,205,157) teaches in Fig. 3 illustrated in more detail, the transport network 45 between the mobile station 15, base transceiver station 30 and interworking function 40 or PCU 46. With the further development of user applications within a public land mobile network (PLMN), a number of high capacity non-speech data services have been introduced. Such services include all circuit-switched data services as defined in TSGSM02.02 and TSGSM02.03, as well as other GSM phase 2+services, including facsimile transmission, high-speed circuit-switched data (HSCSD), high-speed modem connections, and general packet radio services (GPRS). As a result, a telecommunications module known as an interworking function (IWF) 40 has been developed to enable the transmission and protocol adaptation from one telecommunications network, such as a connected PSTN 50, to the serving PLMN. The IWF 40 may be co-located with a particular mobile switching center (MSC) serving a designated geographic area or may be implemented as a separate telecommunications node. The IWF 40 is connected to a transcoder/rate adapter unit (TRAU) 55. The TRAU 55 is further connected to a number of base transceiver stations (BTS) 30 providing radio coverage for mobile stations 15 located within the serving MSC coverage area (Col. 3, lines 31 plus).

One skilled in the art would have recognized the need for efficiently providing a method and system for allocating of time slots in uplink/downlink TDMA frames using half duplex, and

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would have applied Galyas's delays generated within a GPRS, HSCSD and Ohta's novel use of the frequency assignment of the frequency bands used on a communication path into Persson's teaching of the division of the frame structure when transmitting and receiving signals in a mobile station. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Galyas' method for propagation delay control, Ohta' communication system having at least two types of communication channels into Persson's method for dividing a frame structure in a mobile station with the motivation being to provide a system and method for operating a TDMA radio system having multi slot capabilities and utilizing half duplex.

### *Conclusion*

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Gilbert et al. (US#6,016,311) is cited to show the Adaptive time division duplexing method and apparatus for dynamic bandwidth allocation within a wireless communication system.

The Papadopoulos et al. (US#5,602,836) is cited to show the multiple access cellular communication with circular interleaving and reduced dropped-packet runlengths.

The Papadopoulos et al. (US#5,594,720) is cited to show the multiple access cellular communication with dynamic slot allocation and reduced co-channel interferences.

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Dent (US#5,539,730) is cited to show the TDMA/FDMA/CDMA hybrid radio access methods.

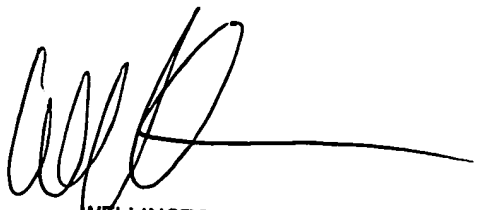
10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Mphan

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